

**RELATIVE OPTICAL PATH PHASE RECONSTRUCTION
IN THE CORRECTION OF MISFOCUSED IMAGES USING
FRACTIONAL POWERS OF THE FOURIER TRANSFORM**
Inventor: Lester F. Ludwig
Docket No.: 2738-11

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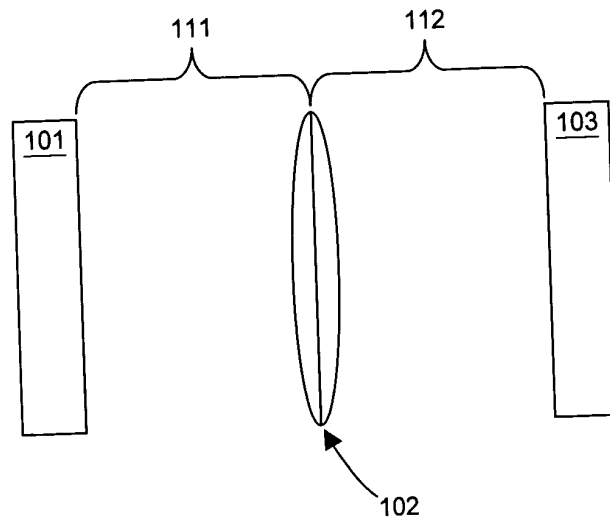


FIG. 1

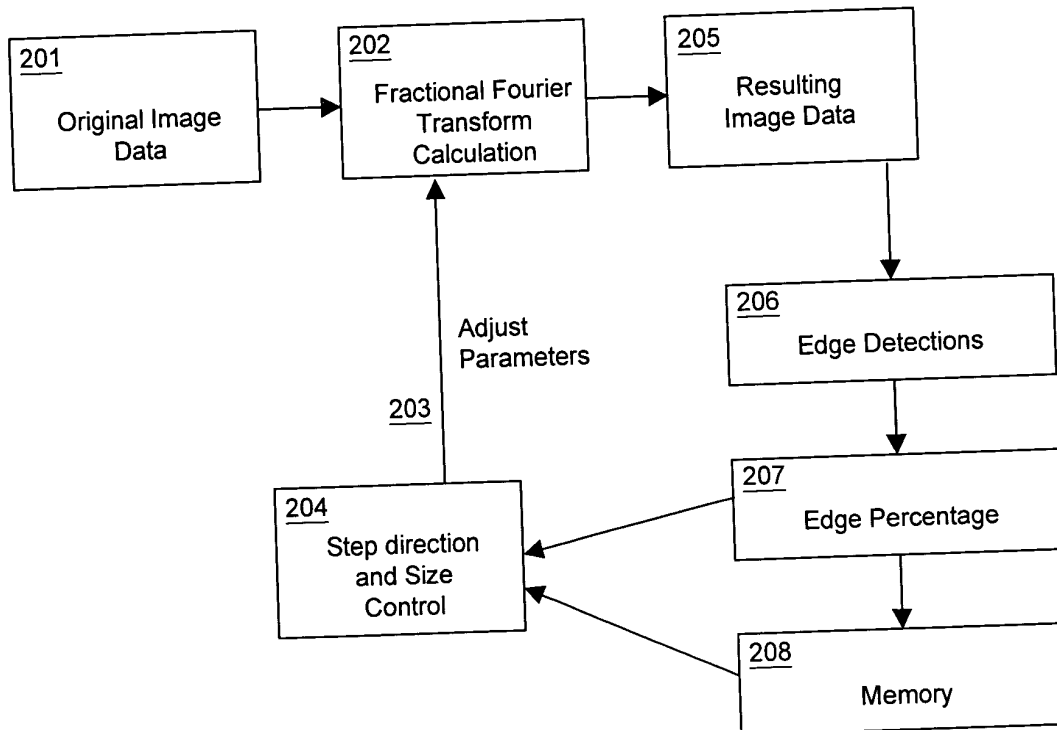


FIG. 2

**RELATIVE OPTICAL PATH PHASE RECONSTRUCTION
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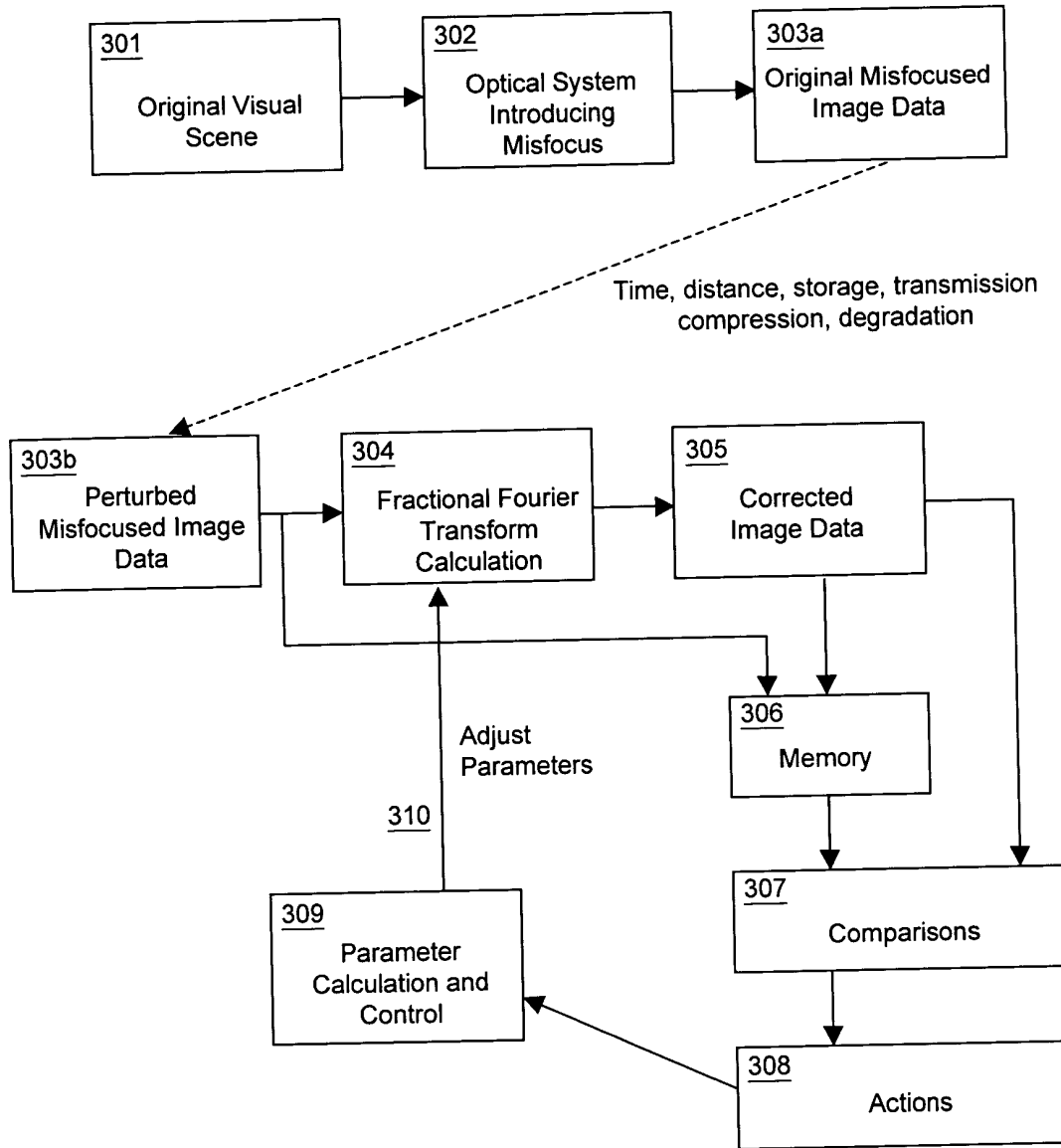


FIG. 3

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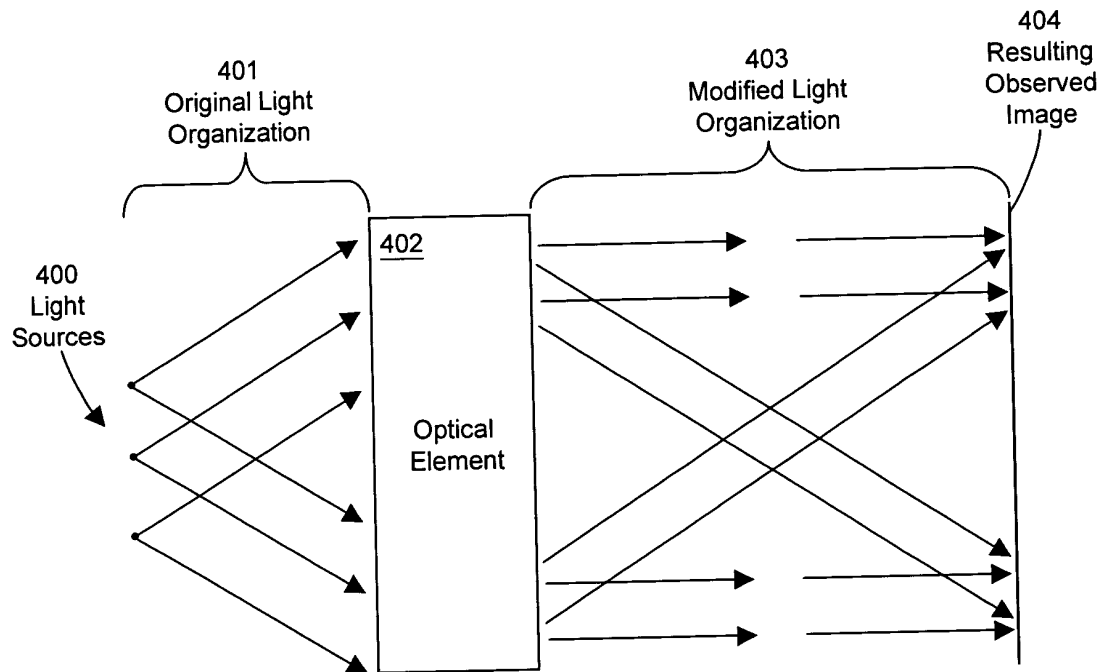


FIG. 4

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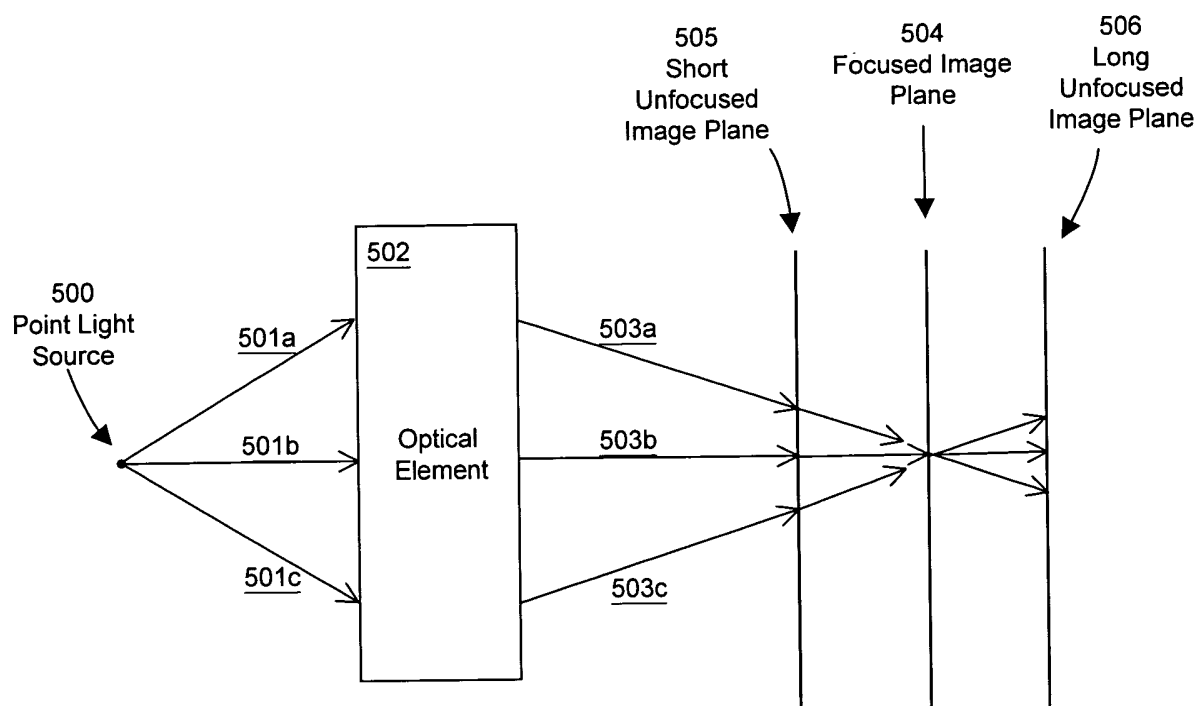


FIG. 5

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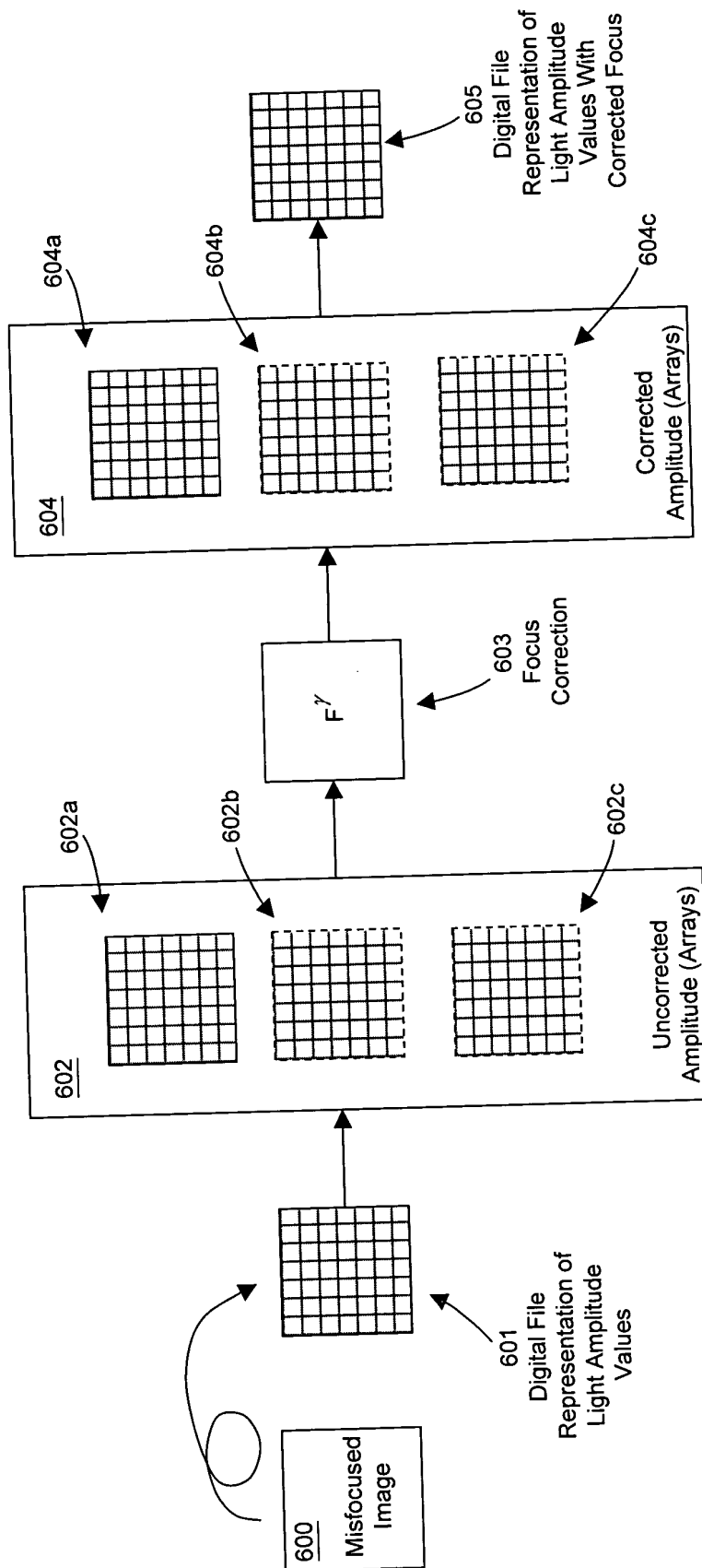


FIG. 6

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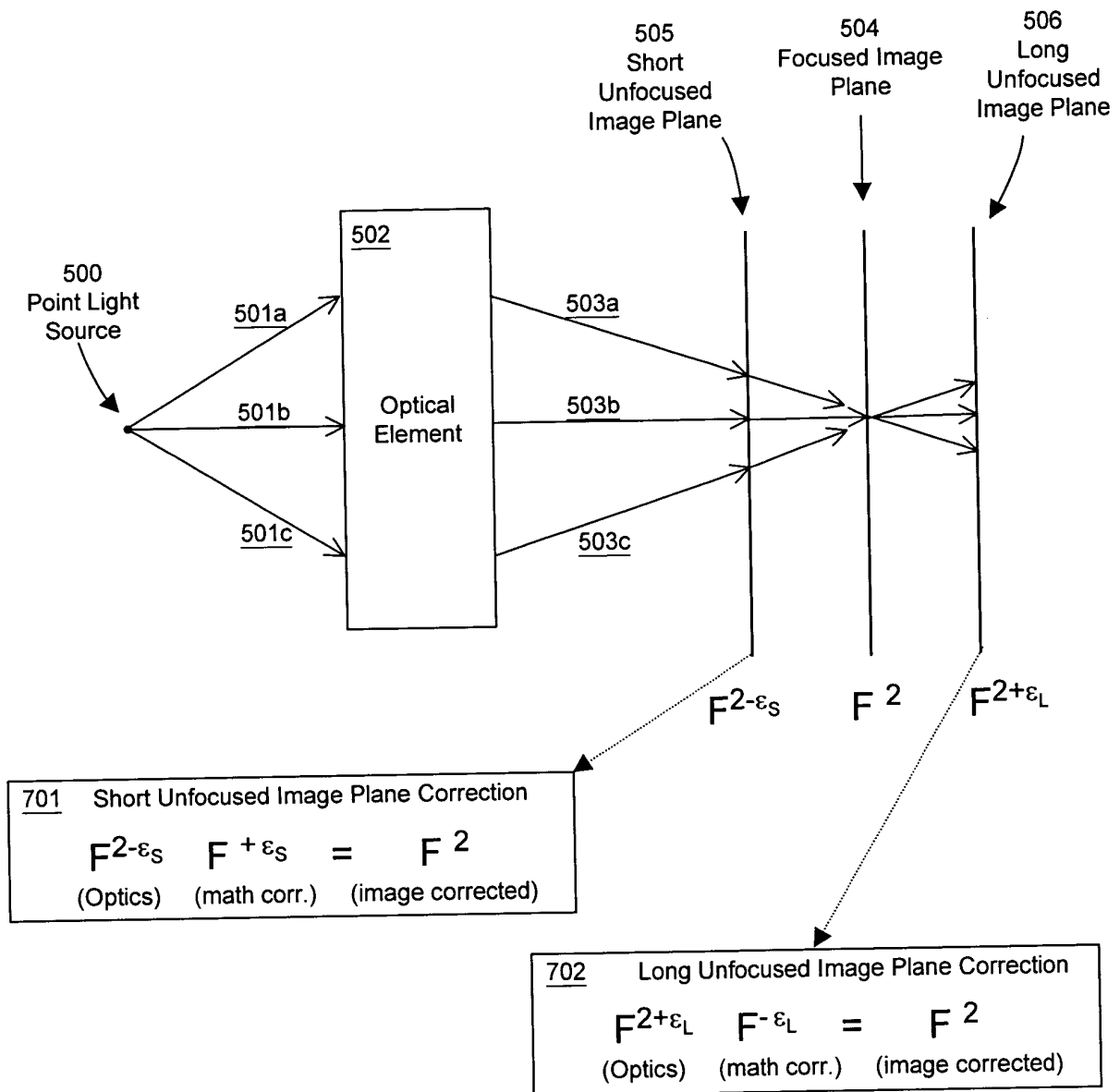


FIG. 7

**RELATIVE OPTICAL PATH PHASE RECONSTRUCTION
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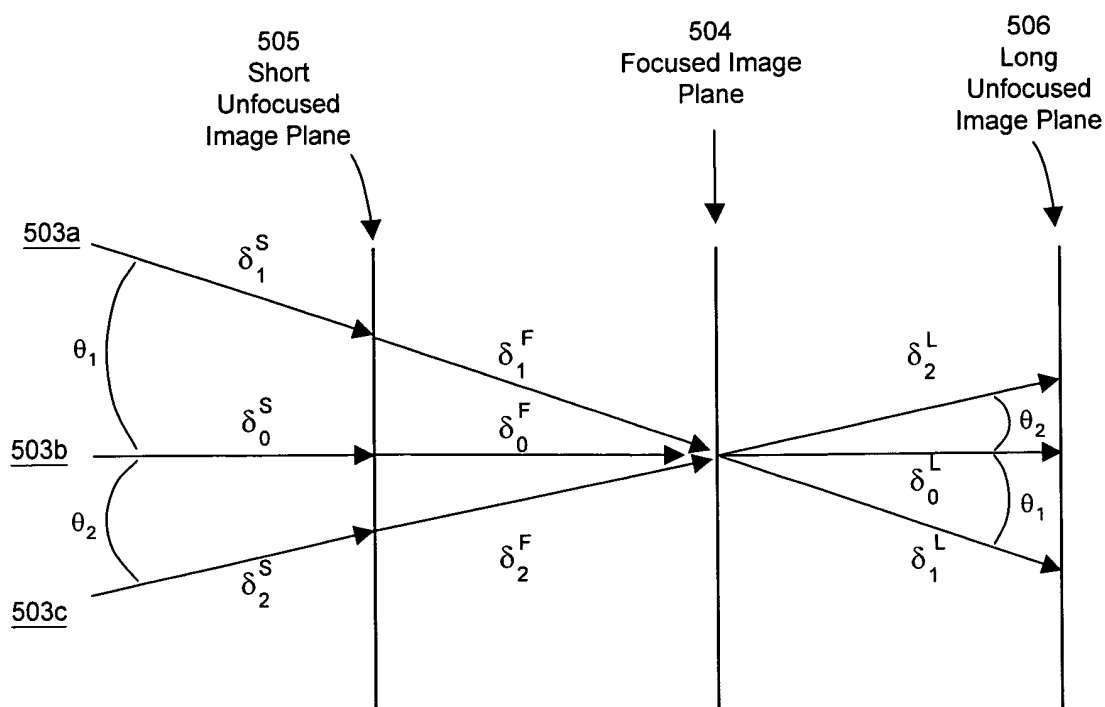


FIG. 8

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901

$$F^{\alpha} = (|F^{\alpha}| \angle F^{\alpha})$$

FrFT Amplitude Phase
Operator component component

902

Optics → Math Correction → Corrected Result

$$F^{2-\epsilon} \cdot F^{\epsilon} = F^2$$

903

Optics → Math Correction → Corrected Result

$$(|F^{2-\epsilon}| \angle F^{2-\epsilon}) \cdot (|F^{\epsilon}| \angle F^{\epsilon}) = F^2$$

904

Amplitude Only Image → Math Correction → Corrected Result

$$(|F^{2-\epsilon}| \underbrace{\hspace{2cm}}) \cdot (|F^{\epsilon}| \angle F^{\epsilon}) \neq F^2$$

Missing phase information

905

Amplitude Only Image → Phase-Restored Math Correction → Corrected Result

$$(|F^{2-\epsilon}|) \cdot (\angle F^{2-\epsilon} \underbrace{|F^{\epsilon}| \angle F^{\epsilon}}_{F^{\epsilon}}) = F^2$$

$$(\angle F^{2-\epsilon} \quad F^{\epsilon})$$

FIG. 9

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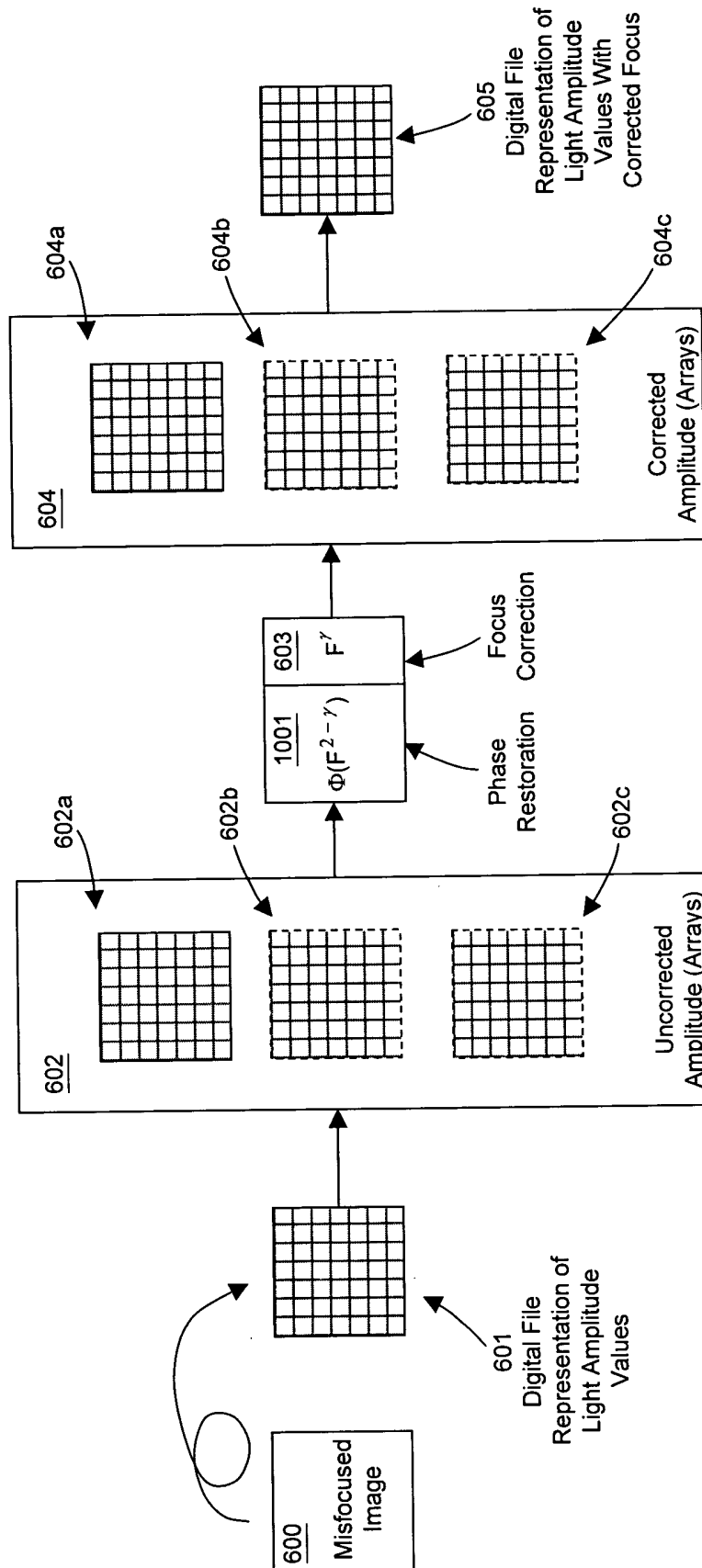


FIG. 10